met with; and it is in this state especially that the physician should be able to recognize them. At this time they are 0·33 millim. in length and 0·022 millim. in breadth. The œsophagus shows its characteristic form very well, resembling a pestle with two heads, one cylindrical, the other spherical. The intestine contains fatty globules, no doubt derived from the milk which constitutes the patient's diet. The uterus only appears in the form of a vesicle on the right side of the animal; the vulva is not yet open.

Five days suffice for the *Rhabditis stercoralis* to attain its complete development under favourable circumstances; hence its extreme abundance in the intestines of the patients.

In fine, this Nematode, very nearly allied to *Rhabditis terricola*, Duj., so well described by M. Péres, differs from the latter in its constantly smaller size, but especially in the form of the penial apparatus, which is moreover destitute of cirri and of the caudal hood.

Dr. Normand has met with this parasite in the stomach, in the whole of the intestine, in the pancreatic duct, the gall-duct, the hepatic ducts, and on the walls of the gall-bladder.—*Comptes Rendus*, October 9, 1876, p. 694.

On the intimate Phenomena of Cell-Division. By M. H. Fol.

In my memoir on the Geryonidæ I gave the first exact description of these phenomena, which previously had not been understood either by botanists or zoologists. All the principal points in those processes, such as have been since made known in more detail, were contained in the above-mentioned description. My observations were soon confirmed by the independent works, posterior to mine, of MM. Flemming and Bütschli; and my theoretical ideas have received valuable support from M. Flemming and especially from M. Bobretzky. I have now to communicate the results of the investigations I have just made upon segmentation in the Heteropoda, the Echini, and in *Sagitta*, which appear to me fitted to lead to the modification of the ideas accepted by most recent authors.

The centres of attraction appear, before each segmentation, at the two opposite poles of the nucleus, which is still absolutely intact, and seem to be a local fusion of the substance of the nucleus with the vitelline protoplasm, or perhaps an irruption of the protoplasm into the more fluid interior of the nucleus. To these two small aggregations of sarcode, rays of sarcode immediately run, some of them extending in the interior of the nucleus from one centre of attraction to the other, whilst the other rays diverge in the vitellus. I first described this formation of rays in Pteropoda; and M. Bobretzky has arrived independently at perfectly concordant results, in his remarkable memoir on the embryogeny of the Gasteropoda. M. Bütschli ascribes especial importance to the intranuclear filaments, to which he gives the name of *fibres*; whilst the filaments which lose themselves in the vitellus are regarded by him merely as striæ. This distinction is founded especially on the different aspect of these two kinds of filaments, a difference which is quite naturally explained if we consider that the intranuclear filaments are immersed in a nearly fluid medium much less refractive than the proto-

plasm of the filaments, while the extranuclear filaments, drowned in protoplasm, must be very difficult to distinguish. And it may be observed, in fact, in such cases as that of the Geryonidæ, in which the vitellus is almost entirely composed of a protolecyth which possesses a power of refraction very different from that of the protoplasm, that the extranuclear filaments are almost as distinct as the intranuclear filaments. The difference between these filaments is only apparent, and depends on the properties of the substance that surrounds the rays of sarcode.

The small granules or bacilli which, according to M. Bütschli, appear in the middle of each of the intranuclear fibres are in my opinion only inflations or varicosities of those filaments. I have never seen them united into a lamella, as described by MM. Strasburger and Van Beneden. M. Bütschli has shown that these inflations divide, and go to unite with the centres of attraction which are now represented by aggregations of protoplasm the bulk of which increases rapidly; if these varicosities only showed themselves upon the intranuclear filaments, they would constitute a remarkable difference between the two kinds of filaments. But this is not the case. In the ova of the Geryonidæ, which are not very compact, and even in the much denser ova of the Echini, we can distinguish upon the extranuclear filaments varicosities which have hitherto escaped the notice of all observers. These inflations are more elongated and less regular than those of the interior of the nucleus; but nevertheless they are indubitable varicosities, which move like the others and pass slowly to amalgamate with the central aggregation of protoplasm.

This aggregation, therefore, is not exclusively a derivative of the substance of the old nucleus, either by its mode of formation or by its mode of growth; it is a result of the fusion of a portion of that substance with a part of the protoplasm of the vitellus. M. E. van Beneden considers the new nuclei to be composed of two pronuclei—one derived from the old nucleus, the other from the surrounding vitellus. In the cases observed by me there are no distinct pronuclei, but a direct fusion between these substances of diverse origin.

The reagent which best shows all these filaments is, in my opinion, picric acid followed by glycerine. Osmic acid, employed by M. O. Hartwig, causes the extranuclear filaments almost to disappear; hence the much too exclusive importance ascribed by him to one of the systems of filaments. What this naturalist describes as *the nuclear fibre* is an artificial product, resulting from the action of an ammoniacal liquid.

As regards the relations of the central aggregations with the new nuclei, I have often observed that these aggregations, after having absorbed the greater part of the radial filaments and their varicosities, present clearer and probably more liquid spots than the rest of the mass; this is why I previously described them under the name of *vacuoles*. The new nucleus is the result of the fusion of these vacuoles; and what remains of the central aggregation constitutes the envelope of the nucleus. Frequently, but not always, we see a vacuole originate, not in the central aggregation, but in an

excentrical position, on the side of the spot where the old nucleus was. This shows that the liquid of the nucleus has the same double origin as the aggregations themselves.

We must therefore regard these phenomena of cell-division as occasioned by a fusion between the protoplasm and the nucleus of the cell, a fusion which commences at the opposite poles of the nucleus. The nucleus only occupies the centre of the cell during periods of repose; as soon as the activity of reproduction is manifested, the nucleus ceases to be the centre of the system, and the points of fusion become the places of convergence for the currents of sarcode which travel from all sides towards these new aggregations. The new nuclei result from a partial liquefaction of these aggregations; they are therefore composed of a mixture, in very different proportions in different cases, of the substance of the old nucleus and the protoplasm of the cell.—*Comptes Rendus*, October 2, 1876, p. 667.

On a Species of Iapyx. By Prof. J. Wood-Mason.

Prof. Wood-Mason exhibited specimens of a species of *Iapyx* which he had recently found amongst the decaying leaves and fungi at the foot of a bamboo-clump in his own garden at Calcutta, and said:—

"This remarkable form of Arthropoda, which has not hitherto been met with in India or, indeed, in any part of Asia, is of the greatest interest, as belonging to a group the members of which are considered by Sir John Lubbock to be the living representatives of a primæval form from which the great orders of insects have all originated. Discovered many years ago in Algeria by M. Lucas, the eminent French entomologist, *Iapyx solifugus*, the type of the group, was only made known to science in 1864, when Mr. Haliday described and figured it in the 'Transactions of the Linnean Society of London.' In the following year it was submitted to a more careful examination by Meinert, who detected a pair of rudimentary appendages on each of the seven anterior segments of the abdomen, just as in its allies *Campodea* and *Nicoletia*, in which latter, however, all the abdominal segments appear to be thus furnished. Four species of the genus have already been described, viz.:—*Iapyx solifugus*, Haliday, from Algeria, Switzerland, and various parts of Italy; *I. Saussurii*, Humbert, from Mexico; *I. gigas*, Brauer, from Cyprus; and *I. Wollastoni*, Westwood, from Madeira and an adjacent island. A fifth has now been discovered thousands of miles from the nearest of these localities, in association with a large bright crimson-coloured species of *Anoura*, two species of Springtails, two or three Pselaphidæ, and five or six Myriopods, amongst which a *Polyxenus* (differing from the European *P. lagurus* in having one instead of two pencils of silvery hairs at the end of the body) and a species of the very remarkable genus *Scolopendrella* especially merit attention."—*Proceedings of the Asiatic Society of Bengal*, August 1876.

"*On the Fecundation of the Egg in the Common Fowl.*"

In the 'Annals' for November, p. 369, an unfortunate erratum has occurred—the name of the author of the paper under the above title being printed P. Tascher; it should be P. Tarner.